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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,361	02/14/2002	William J. LaBarge	DP-302932	1534

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/076,361

Applicant(s)

LABARGE ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2-9-04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement form PTO-1449 filed February 14, 2002 is missing from the file. It is suggested that a copy of the PTO-1449 filed February 14, 2002 be provided in Applicant's next communication so that the Examiner can initial it as being considered.

### ***Claim Rejections - 35 USC § 112***

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 is indefinite because it depends from claim 14, which is a process claim. It is suggested to have this depend from claim 16.

### ***Claim Rejections - 35 USC § 103***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-3, 6, 9-16 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caren et al. (U.S. Pat. 6,357,223) in view of Naohiro et al. (Japan 2000-140642).

Caren et al. teach forming free radicals or other active species by **a corona discharge device 30 (i.e. a nonthermal plasma generator) mounted within the catalytic convertor 13**. As shown in Fig. 13, a typical three way catalytic convertor comprises an outer steel shell or container, 131, and a plurality, in this case **two honeycomb catalyst "bricks", 132**. **The corona discharge device 30, as shown in Fig. 13, may be mounted between the two honeycomb catalyst "bricks", 132, or at any other position that introduces the radicals at a point upstream of the downstream end of at least one of the two catalyst bricks, 132.** (Column 13 lines 51-65) Their invention is directed to a method and an apparatus for the reduction of the amount of pollutants, such as carbon monoxide (CO), hydrocarbons (HC), and **oxides of nitrogen (NOx), in the exhaust gas stream produced by the high temperature combustion of fuel.** (Column 9 lines 60-65)

The differences between Caren et al. and the present claims is the material of the catalyst is not discussed and the specific ranges of Applicants' claims are not discussed.

Naohiro et al. teach a catalyst for **emission gas purification** using **two** or more sorts of **transition-metals phosphate**. (See Machine translation 0012) The transition metals to be utilized include **Zr, Ti**, V, nickel, Fe, Co, Mn, Cr, Nb, Ta, Mo, etc. (See Machine translation 0018) The transition metal phosphate can support noble metals

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chosen from **Pt, Pd, and Rh** of up to 0.1 to 20% of the weight. (See Machine translation 0019)

The motivation for utilizing a catalyst with a composition having two or more transition phosphates and a noble metal is that it allows for inhibiting oxidation in SO<sub>2</sub> and accelerating oxidation in hydrocarbons. (See Abstract)

As to the ranges of Applicant's claims, it is known to select a value in a known range because selecting values in overlapping ranges has been held to be obvious.

As to the amount of nitrogen oxides removed the composition of the catalyst is the same so it is believed that the amount of nitrogen oxides removed would be the same.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Caren et al. by utilizing a specific catalyst composition as taught by Naohiro et al. because it allows for inhibiting oxidation in SO<sub>2</sub> and accelerating oxidation in hydrocarbon.

Claims 4, 5, 7, 8, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caren et al. in view of Naohiro et al. as applied to claims 1-3, 6, 9-16 and 19-24 above, and further in view of Hsiao et al. (U.S. Pat. 5,891,409).

The differences not yet discussed are the use of the oxidation catalyst after exposing it to the phosphate catalyst of the catalytic convertor is not discussed, disposing the oxidation catalyst downstream of the plasma field and a pulsed corona plasma.

Hsiao et al. teach in Fig. 3 utilizing a **pulsed electrical power to create a corona discharge to for reducing NO<sub>x</sub>**. A **catalytic convertor 78** is mounted on a bulkhead 80 and provides for the selective catalytic reduction of NO<sub>2</sub>. An **oxidation catalyst 82** is mounted on a bulkhead 84 and provides for the burning of any excess hydrocarbons not consumed by the processor 74 and the catalytic convertor 78. (Column 8 lines 42-65)

An oxidizing catalyst can be platinum/alumina. (Column 13 lines 46-55)

Caren et al. teach placing the corona discharge device upstream of at least one of the two catalyst bricks or remotely from the catalytic convertor. (Column 13 lines 56-65)


The motivation for using an oxidation catalyst after exposing it to the phosphate catalyst of a catalytic convertor, disposing the oxidation catalyst downstream of the plasma field and utilizing a pulsed corona plasma is that it allows for reducing NO<sub>x</sub> emissions. (Column 6 lines 34-35)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized an oxidation catalyst after exposing it to the phosphate catalyst of a catalytic convertor, disposing the oxidation catalyst downstream of the plasma field and utilizing a pulsed corona plasma as taught by Hsiao et al. because it allows for reducing NO<sub>x</sub> emissions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
March 15, 2004